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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/522,589

08/22/2005

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EXAMINER

SAVAGE, MATTHEW O

ART UNIT

PAPER NUMBER

1797

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/522,589	Applicant(s) MAZYCK ET AL.	
	Examiner Matthew O. Savage	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 July 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) 15-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1-26-05, 9-15-05, 11-20-06</u> . | 6) <input type="checkbox"/> Other: _____ |

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Applicant's election without traverse of group I, the method, in the reply filed on 7-14-08 is acknowledged.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3 and 6-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Brym.

With respect to claim 1, Brym discloses a method for removing mercury from a fluid stream (see line 66 of col. 6, the fluid being water as mentioned in the abstract) including the steps of: providing a composite material comprising a substrate (e.g., plates of glass or ceramic, see lines 48-49 of col. 8) and catalyst particles (e.g., TiO_2 , see lines 50-51 of col. 8); and contacting a fluid stream with the composite, wherein the composite adsorbs and oxidizes the mercury (e.g., to MgO , see line 66 of col. 6, the TiO_2 being capable of absorbing and oxidizing the mercury).

As to claim 2, Brym discloses the catalyst particles as being on the substrate surface.

With respect to claim 3, Brym discloses TiO_2 which can function as a sorbent.

Concerning claim 6, Brym discloses the step of irradiating the composite material with radiation (e.g., with ultraviolet light, see lines 33-38 of col. 9).

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As to claim 7, Brym discloses the radiation as having a wavelength of from about 160 to about 680 nm (e.g., 320-400 nm, see lines 36-38 of col. 9).

Concerning claim 8, Bryn discloses a glass substrate that is inherently transparent to radiation.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, 4, and 8-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brym in view of Zhang et al.

With respect to claim 3, Brym fails to specify the substrate as being a sorbent. Zhang et al disclose the concept of using a sorbent as a substrate for supporting TiO₂ (see the abstract and line 58 of col. 6) and suggests that such a support provides a large surface area for adsorption and oxidation of oxidizing contaminants. It would have been obvious to have modified the method of Brym so as to have included the substrate in the form of a sorbent as suggested by Zhang et al in order to increase the amount of surface area for the adsorption and oxidation of contaminants including organic contaminants and mercury.

Concerning claim 4, Zhang et al disclose a gel (e.g., silica gel, see line 12 of col. 9).

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With respect to claim 8, Brym fails to specify that the substrate is transparent to radiation. Zhang et al disclose a substrate (e.g., silica gel) that is transparent to radiation (see line 13 of col. 9) and suggests that such an arrangement permits UV radiation to penetrate inner portions of a catalyst bed formed with the substrate thereby increasing the reactive surface area of the catalyst bed. It would have been obvious to have modified the method of Brym so as to have included the substrate as suggested by Zhang et al in order to increase the reactive surface area of a bed formed with the substrate.

Concerning claim 9, Zhang et al specify a substrate formed of porous silica (e.g., DavissilTM).

Regarding claim 10, Brym and Zhang et al disclose a catalyst comprising TiO_2 (see line 23 of col. 8 of Brym and line 58 of col. 6 of Zhang et al).

As to claim 11, Zhang et al discloses a support formed of silica gel, specifically DavisilTM which has a surface area of 1-1500 m^2/g .

Regarding claim 12, Brym fails to specify the catalyst as being present in an amount from .1-100%. Zhang et al teach using catalyst present in a composite material in an amount of .1-50% and teaches that such an arrangement increases the surface area of a catalyst bed when using the catalyst in particulate form. It would have been obvious to have modified the method of Brym so as to have included the arrangement of Zhang et al in order to increase the surface area of the catalyst bed.

Concerning claim 13, Brym fails to specify regenerating the composite. Zhang et al disclose regenerating an analogous composite (see lines 5-7 of col. 12) and suggests

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that such a step removes accumulated contaminants from the composite thereby maintaining the contaminate removal efficiency at a high level. It would have been obvious to have modified the method of Brym so as to have included the regeneration step as suggested by Zhang et al in order to maintain the contaminate removal efficiency of the composite at a high level.

Regarding claim 14, Zhang et al disclose thermal regeneration (e.g., with hot water or steam, see line 6 of col. 12).

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brym in view of Zhang et al as applied to claim 4 above, and further in view of Burns et al.

Zhang et al disclose silica gel but fails to specify xerogel. Burns et al disclose xerogel and suggest that such an adsorbent has a high surface area. It would have been obvious to have modified the silica gel substrate suggested by Brym and Zang et al so as to have included a silica xerogel as suggested by Burns et al in order to further increase the surface area of the substrate thereby increasing the reactive surface area of the composite.

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The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

/Matthew O Savage/
Primary Examiner, Art Unit 1797
571-272-1146